July 6, 2007

REPORT: Full Building Survey

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Tim Nelson, Facilities Management’s Asbestos Coordinator, 25 Shops

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SUBJECT: Asbestos Material Survey - Snyder Hall
EH&S Project No: 352-94-108
Client Project No: for database

Scope of Work: A full building asbestos material survey was conducted on August 1, through August 14, 1994. The purpose of the survey was to identify asbestos-containing materials (ACM) as defined by the Environmental Protection Agency (EPA), the Occupational Health & Safety Administration (OSHA), and the Minnesota Department of Health (MDH). Any material that is greater than 1% asbestos is considered to be ACM. The intent of the survey was to identify both friable and non-friable suspect ACM, identify non-friable ACM that may become friable under demolition or renovation conditions, and to provide approximate cost estimates for the removal of identified ACM prior to renovation of the above mentioned sections of Snyder Hall.

Project Description: Two hundred forty-nine (249) bulk samples of suspect ACM were collected on-site and two hundred twenty five (225) were analyzed via polarized light microscopy (PLM) by Milan Asbestos Laboratory for asbestos content. Results of analyses are listed in Appendix I of this report. Appendix I is formatted to provide a room by room inventory of suspect ACM, the asbestos content of each material listed, and friability. An explanation of the tables and abbreviations used in the tables is included with Appendix I. Appendix II is a room by room listing of only those suspect materials that tested >1% asbestos. Minnesota Department of Health (MDH) Asbestos Rules regulate only friable ACM (material may be reduced to powder or dust under hand pressure) while the EPA regulates ACM that may become friable under demolition or renovation conditions. A previous asbestos building survey was performed on the Snyder Hall by Delta Environmental Consultants on February 6, 1990. Information from the previous survey was included as part of this survey.

The following friable or potentially friable materials tested positive as ACM in the building:

- <4" white fibrous pipe insulation (PI)(1)
- <4" pipe fitting insulation (PFI) on white fibrous line (2)
- <4" aircell PI (3)
- <4" fibrous PFI on aircell (4)
- <4" fibrous PFI on fiberglass w/ tar lines(8)
• <4" fibrous PFI on fiberglass lines (9)
• 4"-8" white fibrous PI (10)
• 4"-8" PFI on white fibrous line (11)
• 4"-8" fibrous PFI on fiberglass line w/ tar (17)
• 4"-8" fibrous PFI on fiberglass line (18)
• 9"-14" fibrous PFI (19)
• 9"-14" fibrous PFI (20)
• white fibrous tank insulation (22)
• 9"x9" floor tile gray w/ white swirls (31)
• 9"x9" floor tile, cream w/ gray & black streaks (32)
• 9"x9" floor tile, white w/ tan specks (33)
• 9"x9" floor tile, gray w/ cream streaks (35)
• 9"x9" floor tile, blue gray w/ white streaks (36)
• 9"x9" floor tile, olive w/ black & cream streaks (39)
• 9"x9" floor tile, blue gray w/ white & black streaks (40)
• 9"x9" floor tile, tan w/ white streaks (41)
• galbestos ducting (61)
• fume hood (67)
• floor tile under carpet (76)
• 9"x9" floor tile, cream w/tan swirls (97)
• 2'x2' ceiling tile pinhole wormhole (55)
• 2'x2' ceiling tile pinhole nail hole (60)
• transite (71)
• debris (80)
• block sealer mastic (85)
• wall sealer mastic (86)
• white pipe putty (87)
• tar wall mastic (88)
• sink undercoating (94)
• tan linoleum backing (98)

The following suspect materials tested none detected (ND) as ACM in the building:

• <4" fiberglass w/ tar (7)
• 4"-8" fiberglass w/ tar (16)
• 9"-14" fibrous pipe fitting insulation on fiberglass line (21)
• ceiling plaster (24)
• wall plaster (25)
• red brick mortar (26)
• clay tile mortar (27)
• concrete block mortar (28)
• sheet rock and taping compound (29)
• baseboard adhesive (30)
• 9"x9" floor tile white w/black streaks (37)
• floor tile mastic (37.5, 39.5, 40.5)
• 12"x12" floor tile gray w/ black & white streaks (46)
• floor tile mastic (46.5, 47.5, 48.5)
• 12"x12" ceiling tile, pencil hole (51)
• ceiling tile mastic (51.5)
• 12"x12" ceiling tile, pinhole fissure (52)
• ceiling tile mastic (52.5)
• 12"x12" ceiling tile, pencil nail hole (53)
• ceiling tile mastic (53.5)
• 2’x2’ ceiling tile, white nail hole / crevice (54)
• 2’x2’ ceiling tile, pinhole fissured (56)
• 2’x2’ ceiling tile, rough textured (57)
• 2’x4’ ceiling tile, pinhole fissured (58)
• 2’x2’ ceiling tile, rippled fissured w/ pinhole (59)
• white fibrous wall patch (62)
• pink pipe putty (63)
• red duct putty (64)
• canvas vibration joint (65)
• black lab top (66)
• yellow brick mortar (68)
• gray wall caulk (69)
• gray sheet rock putty (70)
• white wall caulking (74)
• linoleum (75)
• tan pipe putty (78)
• black lab sinks (79)
• textured floor (81)
• troweled on plaster ceiling (84)
• 4”-10” calsil PI (89)
• 4”-10” calsil PFI (90)
• cloth wire wrap (91)
• 2’x2’ ceiling tile white ridged (92)
• gray duct putty (93)
• cork board mastic (99)
• blue pipe putty (101)

The following non-friable with low potential to become friable materials tested positive as ACM:

• floor tile adhesive (32.5, 33.5, 34.5, 35.5, 36.5, 41.5, 43.5, 45.5, 76.5, 95.5, 98.5)
• mastic under carpet (77)
• block sealer mastic (85)
• wall sealer mastic (86)
• white pipe putty (87)
• tar wall mastic (88)
• sink undercoating (94)

The following material tested less than 1% asbestos:

• 9”x9” floor tile, blue gray w/ cream streaks (34)
• 12”x12” floor tile, white w/ gray & olive streaks (47)
• 12”x12” floor tile, white w/ olive streaks (48)
• 9”x9” floor tile, cream w/ olive specks (95)
• 9”x9” floor tile, beige w/ gray specks (96)

For room locations of above noted materials, refer to Appendices.

Observations and Recommendations:

1. Department of Environmental Health & Safety (DEHS):
Please refer to condition assessments for specific damaged areas. In general, materials were found to be in good to excellent shape (except where noted) and do not pose significant health concerns to the building occupants. Asbestos containing debris was identified above the ceiling tile in Room 123A and Room 23E. Asbestos containing debris were also observed in mechanical rooms 34 and S-5.

2. Facilities Management:

Several materials (floor tile mastics) were analyzed as containing less than one per-cent (<1%) asbestos. Please refer to the tables for the materials which have been identified with less than one per-cent. Though these materials are not regulated by MDH or EPA. By current OSHA regulations 29CRF 1926.1101 these materials are no longer regulated by OSHA.

The suspect materials that were analyzed and found to contain trace amounts of asbestos do not meet the strict definition of asbestos containing materials. However, as with any dust creating activity, precautions and work practices should be implemented to minimize nuisance dust levels. Dust suppression techniques (misting the air with water and keeping materials wet during general construction activities) should be required of the general contractor.

Asbestos containing debris was identified above the ceiling tile in Room 123A and Room 23E. Asbestos containing debris were also observed in mechanical rooms 34 and S-5.

In the Appendices, material descriptions followed by a date refer to samples referenced from previous surveys conducted by Delta Environmental Consultants or by the Department of Environmental Health & Safety. The date refers to the original sampling date.

3. General:

Observations were not performed in the wall hatch in room 317, south wall hatch in room 425B or above the ceiling in room 122A. These areas were not accessible at the time of the survey.

Although no roof sampling was done, complete roof sampling is recommended at a time when a qualified roofing contractor is on-site to patch core sample holes in roofing, or prior to roof removal or demolition.

Due to limited access points in the ceilings and walls, some pipe chases were completely inaccessible or only slightly visible. As a result, the quantities listed reflect the visibility available at the time of the survey. Insulated pipes were observed entering the wall in Rooms 123 and 123G. The location of these lines could not be determined past these points.

Debris from asbestos containing pipe insulation was discovered throughout the crawl space of the Sub-basement in the dirt floor (rooms S5 and 34). Asbestos containing debris were also observed above the ceiling in Rooms 23E, 123B. Following a clean-up of the visible debris, it is recommended that either the area be sprayed with a penetrating encapsulant or, in the case of demolition, the area be wetted and locked down with encapsulant. Contact Facilities Management's Asbestos Coordinator Tim Nelson if these remediation techniques wish to be examined further.

The floor tiles and mastics under carpet (76 & 76.5) that were assumed to be asbestos containing were either inaccessible to sampling or unidentifiable. If floor tile under carpet is to be disturbed in the future it should assumed to contain asbestos until sampling can be done. Furthermore, Aircell PI and PFI on Aircell lines was also assumed to be asbestos containing.
Cost Information: The approximate cost for the removal of all ACM is itemized below. These figures are based on the assumption that all friable and potentially friable ACM are going to be removed. For project specific removal costs, contact this office with your project requirements and unit costs can be calculated for the impacted areas.

<table>
<thead>
<tr>
<th>MATERIAL TYPE</th>
<th>LOW RANGE</th>
<th>HIGH RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• thermal system insulation</td>
<td>$147,397</td>
<td>$189,805</td>
</tr>
<tr>
<td>• floor coverings &amp; mastic</td>
<td>$65,786</td>
<td>$131,573</td>
</tr>
<tr>
<td>• miscellaneous mastics &amp; putties</td>
<td>$1,090</td>
<td>$2,180</td>
</tr>
<tr>
<td>• transite hoods etc.</td>
<td>$3,290</td>
<td>$4,935</td>
</tr>
<tr>
<td>• ceiling tile</td>
<td>$13,653</td>
<td>$26,181</td>
</tr>
<tr>
<td>• galbestos</td>
<td>$6,270</td>
<td>$12,540</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$237,486</td>
<td>$367,214</td>
</tr>
</tbody>
</table>

All ACM removal must be performed by a Minnesota licensed asbestos abatement contractor. All asbestos removal shall be performed within the specified procedures as outlined in the University of Minnesota Technical Specification for Asbestos Abatement. Please note that removal costs are highly variable and dependent on such factors as contractor availability, accessibility of work areas and site specific work plans.

Air monitoring is required for many asbestos-related projects. Environmental Health and Safety (EH&S) is available to provide this service. The estimated cost for EH&S to complete air monitoring requirements for specific projects will be made available upon request. The cost of air monitoring is a function of contractor on-site days and may vary dependent upon project specific scope of work. EH&S will provide labor, equipment and project oversight as necessary. Project management and contract administration will be provided by the Facilities Management Project Development Group.

EH&S also recommends that throughout the general renovation activities associated with this building, precautions and work practices should be implemented to minimize nuisance dust levels. Dust suppression techniques (misting the air with water and keeping materials wet) should be required of the general contractor.

If there is any further information required, or other questions arise regarding this request, please contact Bryan Angstman at 627-4887.

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